

WHAT IS CLAIMED IS:

1. A transmitter for sending an encrypted signal to control an device, comprising:

means for generating a radio frequency oscillatory signal;

means for generating a variable binary code;

means for generating a three-valued or trinary code responsive to the binary variable code; and

means for modulating the radio frequency oscillatory signal with the trinary code to produce a modulated trinary coded variable radio frequency signal for operation or control of a secure actuator.

2. A transmitter for sending an encrypted signal to control an actuator according to claim 1, further comprising means for receiving said binary signal and producing a mirrored binary signal, said mirrored binary signal being supplied to said means for converting the binary signal to a trinary signal.

3. A transmitter for sending an encrypted signal to control an actuator according to claim 1, further comprising means for producing a fixed code signal and means for combining said fixed code signal with said rolling code signal.

4. A transmitter for sending an encrypted signal to control an actuator according to claim 3, further comprising means for interleaving trinary bits responsive to said fixed code signal with trinary bits responsive to said rolling code signal to produce a trinary interleaved fixed and rolling code signal.

5. A transmitter for sending an encrypted signal to an actuator according to claim 1, wherein said

means for producing said variable code further comprises means for changing the value of said variable code with each transmitter actuation.

6. A transmitter for sending an encrypted signal to control an actuator according to claim 5, wherein said variable code is altered by addition of a fixed value with each transmitter actuation.

7. A transmitter for sending an encrypted signal to control an actuator according to claim 6, wherein said means for incrementing said variable code increments said variable code by a prime number value.

8. A transmitter for sending an encrypted signal to control an actuator according to claim 1, wherein said means for generating a variable code includes a non-volatile memory for storing a variable code.

9. A transmitter for sending an encrypted signal to control an actuator according to claim 1, wherein said means for generating said variable code includes storage means holding a previous cycle variable code signal from which the variable code is generated.

10. A receiver for receiving an encrypted signal from a transmitter and for generating an actuation signal, comprising:

means for receiving an encrypted radio frequency signal;

means for demodulating the encrypted radio frequency signal into a demodulated encrypted signal;

means for synchronizing with and separating the demodulated encrypted signal into a variable code portion and a fixed code preamble;

means for testing the fixed code preamble and generating a preamble receipt signal in response thereto;

means for testing whether a rolling code value is within a windowed range of rolling code values to avoid false triggering on a spurious rolling code having been transmitted by a person not having permission to authorize generation of the actuator signal and producing a rolling code signal in response thereto;

means for updating the variable code to an incremented rolling code for producing an actuator signal to produce a actuator command in response to the verified fixed code preamble and the variable code.

11. A receiver for receiving an encrypted signal from a transmitter and for generating an actuation signal, comprising:

means for receiving an encrypted radio frequency signal;

means for demodulating the encrypted radio frequency signal into a demodulated encrypted signal;

means for comparing the encrypted signal to a first plurality of signal code values defining a valid signal window and in response thereto generating an actuator signal;

means for comparing the encrypted signal to a second set of values and generating a degraded security code signal in response thereto;

means for comparing a second signal transmission;
and

means responsive to said degraded security code signal for comparing a second successive transmission to said second window values and producing an actuation signal in response thereto and means for inhibiting actuation responsive to receipt of a signal having a value within a trailing signal window.

12. A receiver for receiving an encrypted signal from a transmitter for generating an actuation signal according to claim 11, further comprising means for determining whether the second of the two successive codes is valid by comparing the first received code to the second received code and producing the actuation signal only when the first received code and the second received code are separated by a single rolling code increment.

13. A receiver for receiving an encrypted signal from a transmitter and for generating an actuation signal according to claim 11, further comprising means for generating a fixed code signal in response to said encrypted radio frequency signal, said fixed code signal being compared to a stored fixed code signal and enabling actuation only upon a match.

14. A receiver for receiving an encrypted signal from a transmitter and for generating an actuation signal according to claim 11, wherein said demodulated encrypted signal comprises an interleaved fixed code trinary portion and a variable code trinary portion.

15. A receiver for receiving an encrypted signal from a transmitter and for generating an actuation signal according to claim 14, further comprising means for converting said trinary bits to binary bits.

16. A receiver for receiving an encrypted signal from a transmitter and for generating an actuation signal according to claim 14, further comprising means for converting the demodulated encrypted signal into a binary fixed code signal and a binary variable code signal.

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